

front of pipe, is bolted between the side pieces just above the pivot pin.

#### Wiring.

All of the wire used on the support or in the lamps, is what is known as canvasite cord made up of two strands of flexible wire. A separate circuit is run from each lamp to the switch-board in the office. The wire being connected with a porcelain weather proof socket (care being taken to have the said socket fastened to the inside of lantern in such a manner as to insure that the bulb of the incandescent lamp hangs squarely in the center of the lantern lenses) passes out through the ventilation opening at the top of the lantern, and enters the pipe at the "T" fitting in each of the short horizontal arms, thence passing down on the inside of the pipe to a point about 3 or 4 inches above the top of the wooden portion of the support, where a hole has been drilled to allow of its passing out and down the side of the wooden support, on porcelain knobs, to the side of chimney, which it enters.

#### Lamps.

The lamps were wired with one 32-candle power incandescent electric lamp in each, and in such a manner that the oil lamps can be substituted at any time without delay. The manner in which the incandescent lamp sockets were fastened to the inside of the lanterns will be best understood by an examination of a sketch showing a cross section of lantern globe and lamp socket (see Chart VIII, at side). It will be noticed that all that is necessary to firmly fix a socket in a lamp, when so wired, is to draw up the socket until the wire prongs, when spread out, will touch the sides of the lantern above the glass globe. By simply bending, in or out, the various prongs, the socket can be brought squarely in the center of lantern. All surplus wire should be drawn from the top of lantern.

The bottoms of the lanterns are fastened to the steel upright by a brass 1-inch band passing around each lantern and bolted on either side of pipe as shown in drawing.

#### Switchboard.

The switchboard is made of enameled black slate, 15 by 18 inches, provided with two 32-candle power incandescent electric pilot lamps, having opalescent shades, and two baby knife switches. The mains and knife switches are fused on front of board. All connections are made in rear of board, which is set into a neat varnished oak frame.

#### Painting.

Both the wood and metal portion of the support were given two good coats of paint, the first coat on the metal being mineral paint.

#### General Remarks.

While there is no doubt about a support erected in this manner being able to withstand any strain due to ordinary high winds, 30 to 40 miles, it should be observed closely during winds of a higher velocity, and if found necessary, three or four wire guys run up to within about 5 feet of the top lantern, after which it is thought that its strength will be equal to that of the combined wind vane and anemometer support. In order to make these guys easily detachable, they can be fitted with strong durable spring snaps to snap into the anchor irons.<sup>1</sup>

The only sway, which was very slight, noticed during the

highest winds, since the erection of the new support, was confined entirely to the upper section. It was not a back and forward movement, but more in the nature of a slight lean with the wind, due to the elasticity of the steel pipe.

While a support erected along these lines insures an unobstructed display in every direction, it also permits of lowering the lanterns at a moment's notice, should occasion require, while the lanterns wired in this manner, are not mutilated in the least.

Should neither a suitable wall or chimney be available for the erection of a support of this kind, it might easily be stayed by iron braces.

### OBSERVATIONS AT HONOLULU.

Through the kind cooperation of Mr. Curtis J. Lyons, Meteorologist to the Government Survey, a copy of the daily record at Honolulu is communicated to the Weather Bureau in advance of its official publication, and is herewith printed, as a special contribution, for the convenience of those who are studying the relations of the storms and weather of the United States to those of adjacent countries, with a view to long-range, seasonal predictions.

#### Meteorological observations at Honolulu.

AUGUST, 1898.

August, 1898.	Pressure at sea level.			Temperature.					Relative humidity.			Wind.		Cloudiness.	Rain measured at 6 a. m.
	7 a. m.	3 p. m.	9 p. m.	6 a. m.	2 p. m.	9 p. m.	Maximum.	Minimum.	7 a. m.	2 p. m.	9 p. m.	Direction.	Force.		
1	30.07	30.03	30.09	76	81	77	82	75	67	61	67	ne.	4	3-9	0.02
2	30.05	30.01	30.05	75	81	76	82	74	71	58	71	nne.	3	2-8	0.00
3	30.03	29.99	30.02	74	78	76	83	73	74	75	78	ne.	3-0	4-7	0.01
4	30.00	29.95	30.01	74	83	76	84	72	80	58	74	ne-nne.	2-4	4-2	0.06
5	29.99	29.93	29.99	75	82	77	83	72	74	64	75	ne.	3	7	0.00
6	30.02	30.00	30.07	74	83	77	84	72	87	60	75	ne.	3	5	0.06
7	30.08	30.04	30.08	77	81	78	83	75	75	69	69	ne.	3	9-6	0.03
8	30.07	30.01	30.08	75	83	78	85	74	70	58	67	ne.	3	3	0.00
9	30.07	30.01	30.06	77	83	78	84	76	67	52	67	ne.	2	4-1	0.00
10	30.08	30.03	30.09	76	82	75	83	72	67	58	68	ne-n.	2-0	9-5	0.00
11	30.06	30.01	30.07	74	80	77	83	72	74	61	68	nne.	3-4	6-2-6	0.07
12	30.09	30.02	30.09	73	79	77	80	70	86	62	68	ne.	3	10-8	0.28
13	30.08	30.03	30.08	75	81	75	83	74	70	54	78	ne.	4	5	0.02
14	30.08	30.04	30.09	73	82	77	82	70	78	58	69	ne.	3	4	0.15
15	30.09	30.02	30.11	74	80	76	83	71	78	64	78	ne.	3-4	4	0.01
16	30.09	30.05	30.10	74	82	78	83	72	82	65	70	ne.	3	6	0.10
17	30.10	30.01	30.07	75	84	76	84	73	78	53	66	ne.	2	3-1	0.01
18	30.03	29.96	30.01	72	82	75	83	69	82	58	66	ne.	3	1	0.00
19	30.02	29.95	30.03	66	83	74	84	65	85	49	70	nne.	3	1-0	0.00
20	30.03	29.99	30.07	67	83	75	84	65	90	52	74	se-ne.	2	1	0.00
21	30.07	29.99	30.05	68	83	76	86	66	90	59	74	e-n.	2	3-7-1	0.00
22	30.03	29.98	30.04	76	83	76	85	75	66	59	78	ne.	3-0	3	0.04
23	29.99	29.95	30.03	76	83	76	83	72	66	59	68	ne.	3	4	0.02
24	30.04	30.01	30.10	75	82	73	84	74	70	58	84	ne.	4	4	0.01
25	30.11	30.09	30.14	74	81	77	84	71	74	61	72	ene.	4	6	0.16
26	30.12	30.06	30.13	75	82	74	83	72	74	55	72	nne.	5-3	4-2	0.12
27	30.10	30.03	30.09	73	81	77	82	71	78	54	67	nne-e.	3	2-8	0.04
28	30.07	30.01	30.07	75	80	75	81	70	70	61	68	ne.	0-3	10-3	0.08
29	30.06	30.01	30.11	74	81	77	84	72	74	63	65	ene-ne.	3	3-8	0.62
30	30.11	30.05	30.12	75	81	77	88	73	70	61	67	ne.	4	6	0.18
31	30.07	29.98	30.03	74	79	76	82	73	63	69	69	ne.	3	6	0.04
	30.06	30.01	30.07	73.9	81.6	76.2	83.2	71.9	75.5	57.6	71.0	.....	2.9	5.0	2.06

The station is at 21° 18' N., 157° 50' W.; altitude 50 feet.  
 Pressure is corrected for temperature and reduced to sea level, but the gravity correction, -0.06, is still to be applied.  
 The average direction and force of the wind and the average cloudiness for the whole day are given unless they have varied more than usual, in which case the extremes are given. The scale of wind force is 0 to 10. Two directions of wind, or values of wind force, connected by a dash, indicate change from one to the other.  
 The rainfall for twenty-four hours is given as measured at 6 a. m. on the respective dates.  
 The rain gauge, 8 inches in diameter, is 1 foot above ground. Thermometer, 9 feet above ground. Ground is 50 feet above sea level.  
 Monthly mean temperature (6 + 2 + 9) ÷ 3 is 77.2, and the normal mean is —. The normal rainfall for August is —.

### OBSERVATIONS AT PORT AU PRINCE, HAITI.

Through the kind cooperation of Prof. T. Scherer of Port au Prince, Haiti, the meteorological observations taken by him at 7<sup>h</sup> 12<sup>m</sup> a. m., local time, or noon, Greenwich time, are communicated in manuscript for early publication in the

<sup>1</sup> The greatest strain on the mast during high winds comes at the point through which the pivot bolt passes, and a hole through the iron pipe at this point weakens it appreciably. The construction at this point should be modified so that the full strength of the pipe may be retained. This size of mast would not be strong enough for lanterns heavier than the regulation masthead lantern now in use.—H. E. W. and C. F. M.

MONTHLY WEATHER REVIEW. The original reports are in metric measures; the conversions are by the Editor.

The barometer is 119 feet above sea level; its readings have been corrected by Professor Scherer for temperature and elevation, and also since July 1, 1898, for gravity; this latter correction is  $-0.064$  inch; the thermometers are 6.7 feet above ground; the rain gauge, 7.2 feet above ground. The wind velocity is given in miles per hour.

The position of Port au Prince, Haiti, is latitude  $18^{\circ} 34'$  N., longitude  $72^{\circ} 21'$  W., or  $4^{\text{h}} 49^{\text{m}}$  west of Greenwich. Additional records for this station are published in the annual volumes of the Central Meteorological Institute at Vienna.

*Observations at Port au Prince, Haiti.*

AUGUST, 1898.

Date.	Pressure.		Temperature.			Rel. humidity.	Wind.		Clouds.			Preceding 24 hours.		
	Local.	Sea level.	Dry.	Wet.	Dew-point.		Direction.	Velocity.	Kind.	Amount.	Direction.	Max.	Min.	Total rain.
1.....	Ins.	Ins.	o	o	o	%	se.	1	k	1	sw.	93.2	73.4	0.00
2.....	29.86	30.00	77.0	72.7	70.2	80	se.	1	k	0	se.	92.8	72.5	0.22
3.....	29.81	29.93	78.4	72.9	69.4	75	.....	.....	k	0	s.	92.1	71.6	0.51
4.....	29.85	29.97	76.8	74.3	72.0	86	ese.	1	k	2	e, wnw.	94.1	71.6	1.12
5.....	29.82	30.00	77.2	74.3	72.5	87	.....	.....	k	0	ne.	93.6	74.5	0.05
6.....	29.87	29.99	77.2	69.1	63.5	65	ese.	1	.....	0	.....	91.4	70.9	0.00
7.....	29.84	29.96	78.4	72.3	68.5	73	e.	1	.....	0	.....	91.9	72.3	0.81
8.....	29.87	29.99	80.8	73.8	60.4	70	se.	1	cs	1	.....	90.5	75.6	0.00
9.....	29.85	29.97	79.3	71.6	66.7	67	se.	1	.....	0	.....	93.4	73.2	0.00
10.....	29.85	29.97	77.0	72.0	68.7	77	.....	0	.....	0	.....	95.9	71.2	0.00
11.....	29.82	29.95	77.4	72.1	68.9	76	e.	1	.....	0	.....	90.9	70.9	1.09
12.....	29.84	29.96	76.8	72.1	69.3	79	ese.	1	ks	10	.....	91.8	74.1	0.00
13.....	29.82	29.94	79.3	73.2	69.4	73	ese.	1	.....	0	.....	91.4	73.0	0.00
14.....	29.86	29.98	75.6	73.6	72.5	90	.....	0	k, n	10	.....	90.3	72.0	0.44
15.....	29.84	29.96	77.5	73.9	71.8	83	.....	0	k, cs	1	.....	92.5	74.3	0.00
16.....	29.79	29.91	76.1	74.3	73.2	91	.....	0	k, cs	4	ene.	89.8	72.0	0.80
17.....	29.76	29.88	77.5	71.6	68.0	73	e.	1	k	0	.....	89.8	73.9	0.00
18.....	29.76	29.89	77.4	73.2	70.7	87	ese.	1	k	9	.....	87.8	75.0	0.00
19.....	29.82	29.94	79.9	73.9	70.3	74	ese.	1	k	1	.....	82.0	72.9	0.05
20.....	29.85	29.97	79.7	73.9	70.7	75	ese.	1	cs	1	.....	91.4	72.9	0.00
21.....	29.85	29.97	78.8	72.5	70.7	79	e.	1	.....	1	.....	87.6	73.2	0.00
22.....	29.82	29.94	75.7	70.9	67.8	77	se.	1	nw.	1	nw.	87.1	71.8	0.28
23.....	29.84	29.97	77.9	72.0	68.2	73	e.	1	k	4	s.	91.2	75.2	0.23
24.....	29.90	30.02	78.1	70.2	64.9	66	ese.	1	cs	2	.....	90.1	70.9	0.00
25.....	29.88	30.01	74.1	72.5	71.6	91	.....	0	s	0	se.	91.9	70.9	0.06
26.....	29.83	29.95	77.2	74.7	73.2	88	.....	0	cs	1	calm.	88.9	74.5	0.00
27.....	29.78	29.90	77.5	74.3	72.5	85	.....	0	cs	7	sse-se.	88.7	72.3	0.00
28.....	29.82	29.94	78.3	73.9	71.6	87	e.	1	s	1	e.	89.1	73.8	0.00
29.....	29.86	29.98	78.1	71.4	67.1	70	e.	1	.....	0	.....	89.6	72.3	0.68
30.....	29.83	29.95	76.6	73.8	76.5	98	.....	0	.....	0	.....	90.1	72.0	0.00
31.....	29.84	29.96	77.2	74.1	72.3	86	e.	1	.....	0	.....	91.0	72.1	0.06
Sum.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6.15
Means	29.84	29.96	77.7	72.9	70.2	79.1	.....	1.9	.....	.....	.....	90.7	72.9	.....

NOTE.—According to the new form recently received from the Weather Bureau the above barometric pressure, reduced to sea level, has also received the correction  $-1.57$  millimeters for reduction to standard gravity. This correction was first applied for the month of July, and will be so continued hereafter. —T. S.

[Apparently the gravity correction has also been applied by Professor Scherer to the barometric readings before reduction to sea level, so that in these columns we have the true local pressure as well as the true sea-level pressure. This is in accordance with the instructions on Form 1040, which read as follows:

"Under local pressure enter the observed reading of the barometer after correcting for all known sources of instrumental error, including capillarity, error of scale or zero point, temperature of scale or mercury, or of the vacuum box in the case of an aneroid, and the variations of the force of gravity from normal gravity. If any of these corrections are unknown or unattended to, please state that fact."—Ed.]

### MEXICAN CLIMATOLOGICAL DATA.

Through the kind cooperation of Señor Mariano Bárcena, Director, and Señor José Zendejas, vice-director, of the Central Meteorologico-Magnetic Observatory, the monthly summaries of Mexican data are now communicated in manuscript, in advance of their publication in the *Boletín Mensual*; an abstract translated into English measures is here given in continuation of the similar tables published in the MONTHLY WEATHER REVIEW since 1896. The barometric means have not been reduced to standard gravity, but this correction will be given at some future date when the pressures are published on our Chart IV.

REV—3

### Mexican data for August, 1898.

Stations.	Altitude.	Mean barometer.	Temperature.			Relative humidity.	Precipitation.	Prevailing direction.	
			Max.	Min.	Mean.			Wind.	Cloud.
Durango (Seminario)	6,243	24.07	82.4	54.5	68.0	56	5.26	e	e.
Leon (Guanajuato)...	5,934	24.29	80.4	55.4	66.2	69	7.09	ene.	ese.
Linares (New Leon)...	1,189	28.66	96.8	71.6	84.2	69	4.41	sse.	se.
Magdalena (Sonora)...	2,618	.....	93.9	79.0	87.4	.....	9.25	s.	n.
Merida	50	29.91	96.4	69.1	83.0	75	5.50	ne.	n.
Mexico (Obs. Cent.)...	7,472	23.06	74.8	52.2	61.7	72	5.56	n.	ne.
Morelia (Seminario)...	6,401	23.97	77.0	56.5	64.2	83	5.61	ssw.	e.
Puebla	7,112	23.28	75.6	50.7	64.0	49	7.79	ese.	.....
Saltillo	5,899	24.78	87.8	58.6	73.4	72	3.13	n.	nw.
Trejo (Hac de S. G.)...	.....	.....	75.7	66.2	.....	.....	9.54	ne.	.....
Tuxpan (Vera Cruz)...	.....	30.19	93.2	70.3	82.0	80	14.13	ne.	sw.
Zacatecas	8,015	22.53	78.0	45.7	60.3	72	4.13	e.	e.

### Mexican data for September, 1898.

Stations.	Altitude.	Mean barometer.	Temperature.			Relative humidity.	Precipitation.	Prevailing direction.	
			Max.	Min.	Mean.			Wind.	Cloud.
Colima	.....	.....	88.9	68.7	77.7	.....	.....	.....	.....
Durango (Seminario)...	6,243	24.05	77.4	51.8	56.3	.....	5.90	.....	e.
Leon (Guanajuato)...	5,934	24.37	79.2	49.3	66.2	67	3.11	ene.	e.
Mazatlan	25	29.86	90.5	71.6	82.4	81	9.37	nw.	ne.
Merida (Yucatan)...	50	29.82	97.9	70.9	81.0	80	7.13	e.	e.
Mexico (Obs. Cent.)...	7,472	23.03	75.2	50.0	61.3	71	4.21	n.	ne.
Morelia (Seminario)...	6,401	23.93	74.1	54.3	63.9	81	5.44	sw.	ene., e.
Oaxaca	5,164	25.04	86.5	53.8	68.9	80	8.55	nw.	e.
Tuxpan (Vera Cruz)...	.....	30.11	95.5	70.0	80.1	84	18.08	nw.	w.
Zacatecas	8,015	22.50	76.1	47.1	58.8	73	6.07	e.	e.
Zapotlan (Seminario)	5,078	.....	79.3	60.8	68.4	76	12.40	se.	se.

### METEOROLOGICAL OBSERVATIONS AT HACIENDA PERLA, PUERTO RICO.

By Capt. ARTHUR C. HANSARD.

The Weather Bureau is indebted to Capt. Arthur C. Hansard, Manager of the Hacienda Perla, Province of Numacao, Puerto Rico, for a meteorological record from which the accompanying climatological tables illustrating the weather of that province have been compiled by Mr. A. J. Henry, Chief of Division of Records and Meteorological Data. Hacienda Perla is on the northeastern shore of the island at an elevation of 460 feet above the sea and about an hour's drive therefrom, in latitude  $18^{\circ} 21'$  N., longitude  $65^{\circ} 42'$  W., approximately.

The thermometers in use — maximum and minimum — were verified at Kew and again at New York and San Juan. They are placed in an open balcony, 12.5 feet above ground, shaded from the sun and facing the prevailing wind (north-east).

The rain gauge is of standard make, exposed in the open with the top of receiver 3 feet and 2 inches above ground.

The average rainfall for the two and a half years was 123 inches, about twice as much as falls at San Juan at sea level. The record, although covering but a short time, exhibits many of the characteristics common to the West Indies. February and March are the driest months. Heavy rains begin in May, a month earlier than in western Cuba, and continue with a slight weakening in June and October until the end of the year.

The temperature at Hacienda Perla is slightly lower than at San Juan, as might be expected, on account of the greater elevation of the former. The highest point reached by the thermometer was  $95^{\circ}$  in May, 1898; the lowest,  $61^{\circ}$  in January, 1897, and February, 1898. On the maximum temperature Captain Hansard remarks: "The highest,  $95^{\circ}$ , during May, 1898, was phenomenal and occurred on only two days; in fact I have only noted  $92^{\circ}$  on two days, and  $93^{\circ}$  on one day."